

Algebraic Concepts  
Lesson 20: Growth Formula/Interest  
Math for Standards

Name \_\_\_\_\_

Date \_\_\_\_\_

*EQ: What is compounding and how is it used in investing?*

The formula for annual growth:

$A =$  \_\_\_\_\_,  $P =$  \_\_\_\_\_ ( \_\_\_\_\_ ),

$r =$  \_\_\_\_\_ ( \_\_\_\_\_ ), and  $t =$  \_\_\_\_\_.

The general formula for growth that is compounded over several periods in a year, where  $A$ ,  $P$ ,  $r$ ,  
and  $t$  stand for the same things as above, and  $n$  = number of times compounded in a year:

The general formula can be used for annual situations, as well.

Different ways you can compound:

Annually =

Semi-annually =

Quarterly =

Monthly =

Example 1: The price of milk has increased by an average of 4.1 percent per year since 1980. In 1980, milk had an average price of \$1.75. If the trend continues, what will the cost of a gallon of milk be in 2025?

Example 2: You deposit \$4000 into a bank account at 3.2% compounded quarterly and leave it in your account for 5 years. How much money will you have after 5 years?

Example 3: You take out a loan of \$20,000 at 8.99% compounded monthly. If you do not pay off any of the loan for 2 years, how much will you owe?

Example 4: You decide to start saving for your retirement now. Each year, you put away \$600 and receive 8% interest compounded monthly. When you turn 25, you begin saving \$4000 a year, also at 8%. When you retire at 65, how much money do you have saved for retirement? How much would you have if you only began saving at age 25? At age 35?